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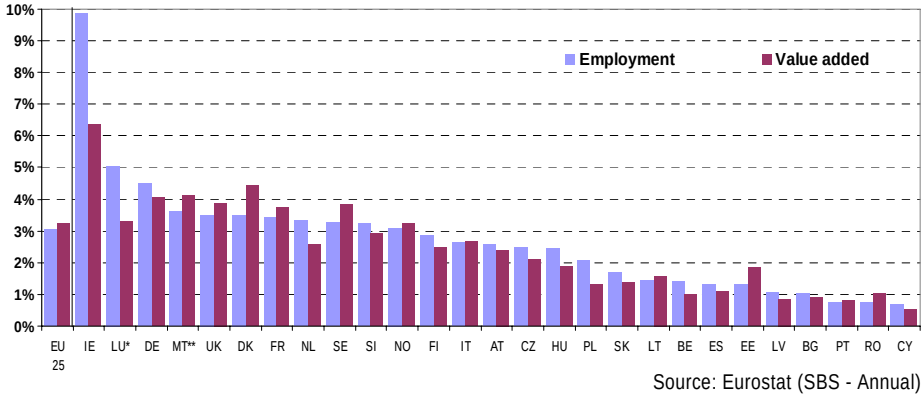
Manufacturing of optical, medical and other precision instruments in the EU

Ireland most specialised Member State

In 2004, the manufacturing sector 'precision instruments' (which corresponds to the 'manufacture of medical, precision and optical instruments, watches and clocks': NACE 33*) was the main activity of 90 900 enterprises in the EU-25, which generated a value added of EUR 51 billion and employed a million persons. As such, the sector represented 3.2 % and 3 % respectively of manufacturing industry (NACE D) value added and employment.

Figure 1: Country specialisation in 'precision instruments' (NACE Division 33), 2004 as a % of the manufacturing industry (NACE Section D)



Source: Eurostat (SBS - Annual)

* 2003 data. – ** 2002 data. Note: NL excludes NACE 33.5. – EL: data not available.
Note: In the case of Ireland, employment and value added specialisation rates in 'precision instruments' are somewhat distorted by factors such as the foreign ownership of enterprises, outsourcing and accounting practices of multinational enterprises in manufacturing (NACE D), used here as the denominator.

When looking at the importance of precision instruments in Member States' manufacturing industries in 2004, Ireland was clearly the most specialised in terms of both value added and employment, with the sector representing well over 6 % of value added and almost 10 % of the employment in its manufacturing industry (Figure 1). The employment share was almost twice as high as in second-ranking Luxembourg.

Among the seven other Member States where precision instruments contributed more than average to manufacturing were two of the Member States that joined in 2004: Malta, and in terms of employment, Slovenia. At the other end of the spectrum came Cyprus where the sector only reached around 0.5% of the country's manufacturing value added and employment.

As shown in Figure 2, the largest contributors to EU-25 value added in precision instruments were Germany (34 %), the United Kingdom and France (with shares less than half as large). Because of Ireland's high value added, it was the fifth largest contributor (4.4 %), ahead of some larger Member States.

*The manufacture of medical, precision and optical instruments, watches and clocks (NACE Division 33) – classified as a 'high-tech manufacturing' sector – includes activities related to the manufacture of instruments, industrial process control equipment, watches, clocks and photographic equipment (while photochemical products, flashbulbs or television cameras are not included). In this publication these activities are referred to as 'precision instruments'.

'Measuring appliances' and 'medical equipment' largest sub-sectors

Table 1: Value added and employment in 'precision instruments' (NACE 33) in the EU-25 by sub-sector, 2004

	Total EU value added		Total EU employment	
	(in EUR million)	%	(in 1000s)	%
Manufacturing (NACE D)	1 590 754		32 732.9	
Manufacture of medical, precision and optical instruments, watches and clocks (NACE 33)	51 272	100.0%	1 000.0 *	100.0%
Medical and surgical equipment and orthopaedic appliances (33.1)	19 599	38.2%	429.2	42.9%
Instruments and appliances for measuring, checking, testing, navigating etc. (33.2)	21 018	41.0%	350.0 *	35.0%
Industrial process control equipment (33.3)	4 141	8.1%	87.3	8.7%
Optical instruments, photographic equipment (33.4)	6 000 *	11.7%	110.0 *	11.0%
Watches and clocks (33.5)	540 *	1.1%	13.0 *	1.3%

* rounded estimate based on non-confidential data: note difference between aggregates and sub-components due to rounding. Source: Eurostat (SBS - Annual)

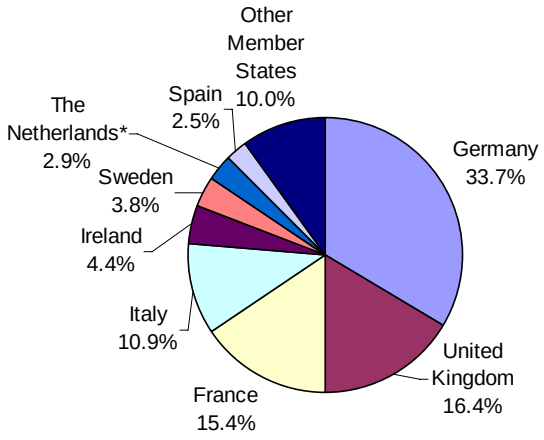
The shares of Germany and Ireland in EU value added were substantially larger in precision instruments than in manufacturing as a whole.

Of the five precision instruments sub-sectors (Table 1), the largest were manifestly 'medical and surgical equipment and orthopaedic appliances' and 'instruments and appliances for measuring, checking, testing, navigating etc.' Together they accounted for nearly 80 % of both sectoral EU-25 value added and employment.

In terms of value added, medical and surgical equipment manufacturing was the largest sub-sector in Spain, Germany and, most conspicuously, Ireland (Figure 3). In the UK, the Netherlands and France, 'instruments and appliances for measuring, testing and navigating' was the most important activity. Among the main contributors, the largest share of 'optical instruments and photographic equipment' was found in Italy: with a share of 21 %, this activity was almost twice the EU average.

Also of note is the variable balance between the two largest activities. In Ireland for instance, the share of 'medical and surgical equipment and orthopaedic appliances' generated as much as 70 % of sectoral value added (which was in fact the largest share

Figure 2: Main contributing Member States to EU-25 value added in 'precision instruments' (NACE 33), 2004, in %



*Share excludes NACE 33.5. Source: Eurostat (SBS - Annual)

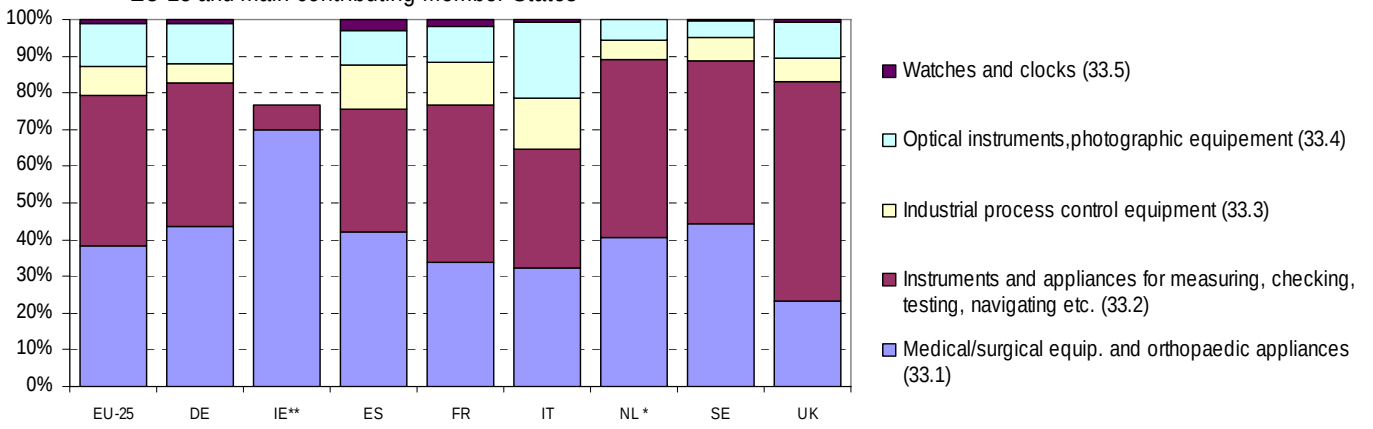
Table 2: Main indicators: 'precision instruments' (NACE 33), 2004

	EU-25	BE	BG	CZ	DK	DE	EE	IE	ES	FR	IT	CY	LV	LT
Value added at factor cost - in million EUR	51 272	468	24	441	1 131	17 288	26	2 266	1 296	7 877	5 571	6	12	35
Persons employed	1 000 000 *	8 767	6 657	33 722	14 621	324 343	1 713	21 770	34 155	133 710	124 441	277	1 776	3 794
Number of enterprises	90 900 *	1 448	873	4 234	696	15 556	126	120	5 321	12 311	21 511	70	149	232
Turnover - in million EUR	127 355	1 543	101	1 390	2 432	40 352	90	5 509	3 428	22 167	15 485	13	34	98
Total purchases - in million EUR	76 424	1 071	79	968	1 307	22 950	67	3 324	2 221	14 237	10 157	8	21	69
Gross investment - in million EUR	3 652	50	7	87	107	1 022	3	249	112	508	445	0	3	7
Average personnel costs in thousand EUR	36.0	44.8	2.4	9.1	46.9	40.8	8.8	35.9	28.6	47.4	34.6	16.5	4.7	5.7
Apparent labour productivity (value-added per person employed) - in thousand EUR	50.0 *	53.4	3.6	13.1	77.4	53.3	15.1	104.1	38.0	58.9	44.8	20.4	6.6	9.3
Wage adjusted labour productivity - in %	138.0 *	119.2	152.7	143.8	165.1	130.8	171.7	290.3	132.9	124.2	129.3	123.5	140.2	162.3
Gross operating rate - in %	13.4	9.1	10.4	12.9	18.8	11.1	12.1	27.0	12.6	7.9	14.8	13.2	12.9	14.8
R&D spending - in million EUR**	6 081.0	87.8	0.1	12.2	277.4	2 683.6	0.9	115.8	58.0	1 419.6	375.0	:	0.0	0.8
R&D personnel**	:	833	33	617	3 242	26 592	124	885	1 539	:	4 695	0	1	70

* Estimations based on non-confidential data. Source: Eurostat SBS - Annual and R&D statistics (BERD)

** 2003 data. – EL data not available.

Figure 3: Value-added in 'precision instruments' (NACE 33) by sub-sector, 2004 (in %)
EU-25 and main contributing Member States



Source: Eurostat (SBS - Annual)

*NL excluding NACE DL 33.5. – ** IE excluding three other NACE groups because of confidentiality; shares of two available groups add up to 77 %.

recorded among all 25 EU Member States). However, this share was down to as little as 23 % in the UK.

Table 2 shows a selection of the most important indicators for precision instruments. EU-25 apparent labour productivity in precision instruments was EUR 50 000 in 2004, about 3 % more than the manufacturing average (EUR 48 600). Among the five sub-sectors, 'instruments and appliances for measuring, checking, testing, navigating etc.' was clearly the most productive (EUR 59 300), while the least productive (EUR 41 000) was 'watches and clocks'.

In the same year, personnel costs were EUR 36 000 per employee, which was 8 % higher than the manufacturing average of EUR 33 200. These higher personnel costs were only partly offset by the higher apparent labour productivity, which resulted in a lower wage adjusted labour productivity ratio of 138 %, against a manufacturing average of 146 %.

The gross operating rate – which is one indicator of profitability – was 13.4 % in 2004, four percentage points more than the manufacturing average (9.5 %). Of the five sub-sectors, the most profitable was 'medical and surgical equipment and orthopaedic appliances' (16.4 %), and the least profitable 'industrial process control equipment' (8.4 %) and 'watches and clocks' (8.3 %).

The higher-than-average profitability of precision instruments did not however lead to more investment. The investment rate – the share in value added of gross investment in tangible goods – was 7.1 % in 2004, just under half the manufacturing average (13.5 %). It was highest in 'optical instruments and photographic equipment' (9.6 %) and lowest in 'industrial process control equipment' (4.2 %). R&D intensity was nevertheless generally higher than it was in manufacturing (see page 5).

Small and medium-sized enterprises (SMEs) were more important in precision instruments than the the manufacturing average. In 2003 SMEs accounted for 66 % and 52 % respectively of total sectoral employment and value added, compared with 59 % and 45 % in manufacturing (data not shown). Comparing Member States, large enterprises contributed more in Ireland and Sweden.

Table 2: Main indicators: 'precision instruments' (NACE 33), 2004, continued

	LU**	HU	MT***	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
Value added at factor cost - in million EUR	81	282	33	1 465 (1)	947	554	155	80	169	73	733	1 947	8 384	584
Persons employed	1 885	20 433	1 145	26 097	16 032	51 503	6 672	12 558	7 782	6 688	11 668	26 392	119 717	7 981
Number of enterprises	53	3 738	33	2 345	1 407	11 136	857	935	450	202	843	2 166	5 862	540
Turnover - in million EUR	165	794	68	4 231 (1)	1 932	1 407	459	225	439	247	1 932	4 867	18 196	1 603
Total purchases - in million EUR	90	514	34	2 735 (1)	1 018	821	308	168	286	181	1 261	2 955	9 758	1 050
Gross investment - in million EUR	8	44	5	76 (1)	58	51	29	20	26,5*	9	37	127	582	33
Average personnel costs in thousand EUR	32.0	8.8	14.5	42.0 (1)	37.5	7.2	16.9	3.2	15.3	7.3	42.7	56.4	41.46	62.1
Apparent labour productivity (value-added per person employed) - in thousand EUR	43.0	13.8	29.1	56.3 (1)	59.1	10.7	23.3	6.4	21.7	10.8	62.8	73.8	70.0	73.2
Wage adjusted labour productivity - in %	134.2	156.2	201.0	134.0 (1)	157.5	149.8	137.9	201.7	142.1	148.1	147.0	130.8	168.9	117.9
Gross operating rate - in %	13.0	15.3	24.8	10.3 (1)	19.8	19.4	10.3	18.2	12.2	9.6	12.8	11.6	19.6	6.1
R&D spending - in million EUR**	:	4.9	0.0	184.0	80.9***	7.4	5.1	2.0	11.4	0.7	158.6	:	578.5	110.1
R&D personnel**	:	399	:	2 039	1154***	507	146	229	329	78	2 038	:	5 718	982

** 2003 data. – *** 2002 data. – (1) excludes NACE 33.5. – CH data not available.

Source: Eurostat SBS - Annual and R&D statistics (BERD)

Radar apparatus among the top products manufactured in the EU

Table 3: Main precision instruments manufactured in the EU-25 and sold in 2005*

Medical and surgical equipment and orthopaedic appliances (33.1)	Prodcom code	Sold value in EUR bn
Apparatus based on the use of X-rays, for medical, surgical, dental or veterinary uses	33101115	3.1**
Needles, catheters, cannulae… used in medical, surgical, dental or veterinary sciences	33101517	2.5**
Dental fittings (dentures, metal crowns, cast tin bars, stainless steel bars...) (excl. individual artificial teeth)	33101759	2.1**
Electro-diagnostic, apparatus (excluding electro-cardiographs), n.e.c.	33101230	1.9**
Instruments and appliances for measuring, checking, testing, navigating etc. (33.2)		
Radar apparatus	33202030	3.6**
Instruments and apparatus, regulating or controlling, n.e.c.	33207090	3.5**
Instruments and appliances for aeronautical or space navigation (excluding compasses)	33201155	2.9**
Electronic instruments, appliances and machines for measuring or checking geometrical quantities	33206550	1.3**
Manufacture of optical instruments,photographic equipement (33.4)		
Unmounted spectacle lenses for the correction of vision, with both sides finished other than single focal lenses	33401159	1.3

*Top products sold excluding generic product categories.
**Estimated data.

Source: Eurostat (Prodcom)

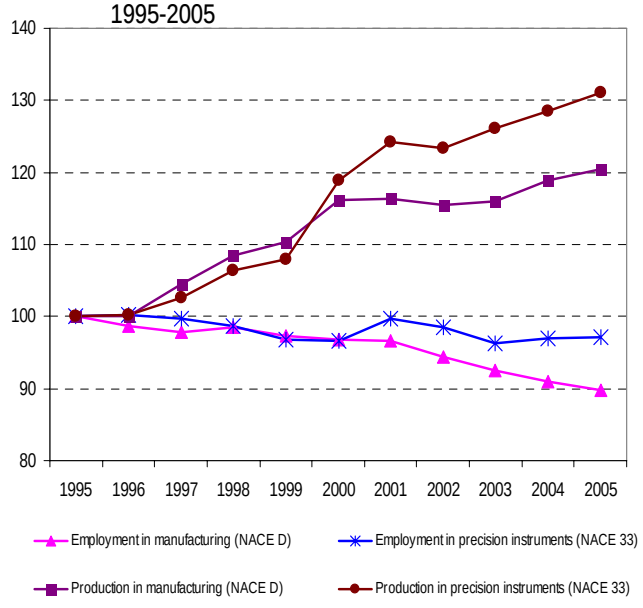
Precision instruments are mostly high-tech, such as radar and X-ray apparatus, but also include low-tech consumables such as needles, syringes and catheters. Precision instruments are supplied to all kinds of sectors, from aerospace to healthcare, and to all kinds of users, including other industrial sectors, households and governments (through procurement).

This diversity is illustrated in Table 3 which shows the top products manufactured in the EU-25 and sold in 2005. The products generating the highest revenues were 'radar apparatus' (EUR 3.6 bn) and 'instruments and apparatus, regulating or controlling, n.e.c.' (EUR 3.5 bn).

High production growth in precision instruments

Between 1995 and 2005, production of precision instruments grew by 31 %, which was 10.6 percentage points more than the manufacturing average (Figure 4). This increase in production – in particular from 2000 onwards – also seems to have curbed employment contraction: the number of persons employed in precision instruments decreased by just 3 % against a more dramatic decline of 10 % in manufacturing generally.

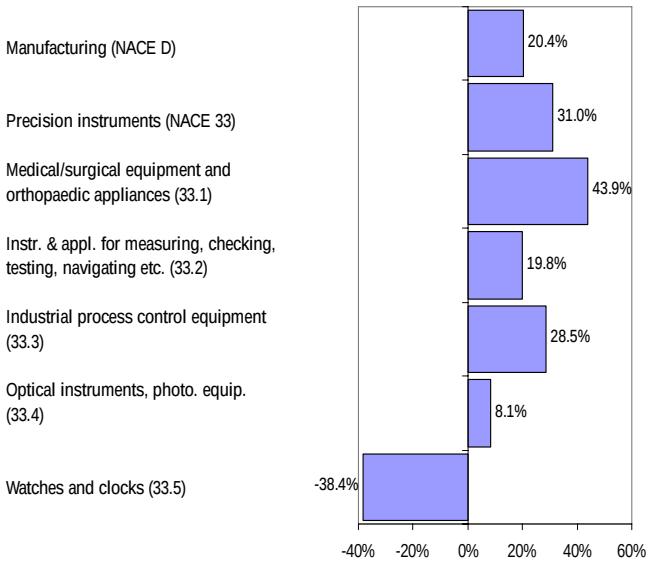
Figure 4: Development of employment and production in 'precision instruments' and manufacturing, EU-25, 1995-2005



Source: Eurostat (STS)

As shown in Figure 5, the production increase in precision instruments was the net effect of growth in four out of five component sub-sectors, notably in the two largest: 'medical and surgical equipment and orthopaedic appliances' (+43.9 %) and 'instruments and appliances for measuring, checking, testing, navigating etc.' (+19.8 %). The former was also the sub-sector for which EU-25 external trade grew fastest, with the production increase apparently fuelled by fast export growth (see page 6).

Figure 5: Development of production in 'precision instruments' by activity, EU-25, 1995-2005

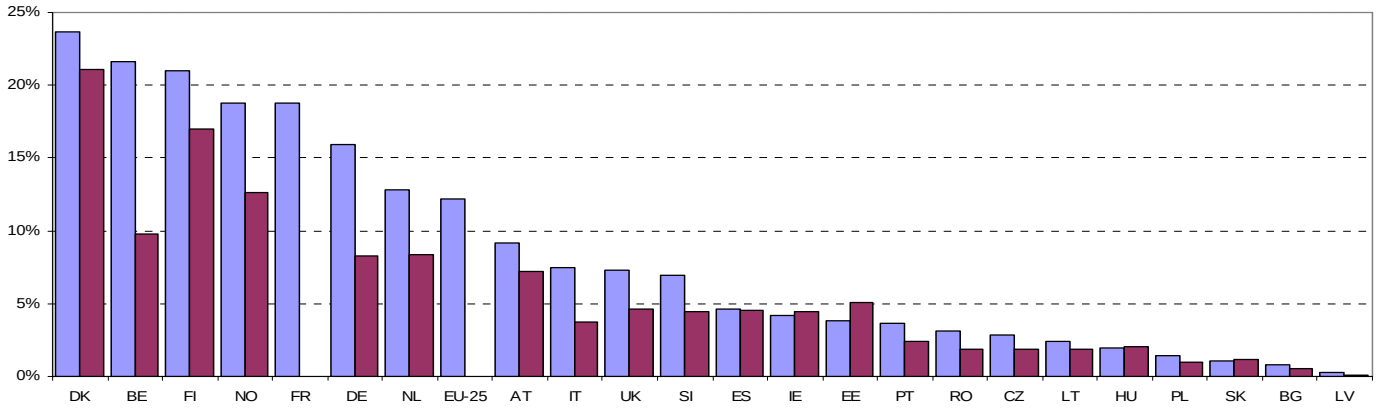


Source: Eurostat (STS)

A very significant contraction of 38.4 % was observed in the smallest sub-sector 'watches and clocks', a decrease that seems to reflect more a situation of home market saturation rather than, as one might think, a correspondingly large rise in imports of cheaper products (page 6).

Share of R&D generally highest in Scandinavian countries

Figure 6: R&D intensity in 'precision instruments', 2003



Source: Eurostat (R&D-BERD and SBS)

Expenditure on research and development (R&D) is a key indicator of efforts to obtain or maintain a competitive advantage in know-how and technology. In 2003, the sector of precision instruments showed a high R&D intensity, when compared with the manufacturing average in most Member States.

Among 23 countries with data available, R&D intensity – measurable by the share of R&D expenditure in value added – was highest in three Scandinavian countries, reaching 24 % in Denmark (Figure 6). The high R&D intensity in Belgium seems – at least partly – the effect of an unusually low sectoral value added in 2003.

R&D intensity measured in personnel terms was generally lower than in expenditure terms, perhaps reflecting relatively high average personnel costs in R&D activities.

Table 4: Breakdown of patent applications made to the European Patent Office (EPO) in 'precision instruments'*, by NACE group, EU-25, 2003

	Number of patents	Share in total	Number of patents per 1000 persons employed
Manufacturing	**61 977**	**:**	**1.9**
Precision instruments (NACE 33)	**4 339**	**100%**	**4.3**
Med./surgical equip. and orthopaedic appliances (33.1)	1987	46%	4.7
Instr.& appl. for measuring, checking, testing, navigating etc. (33.2)	839	19%	2.4
Manufacture of industrial process control equipment (33.3)	521	12%	5.8
Optical instruments, photo. equip. (33.4)	836	19%	7.0
Watches and clocks (33.5)	157	4%	12.1

Source: Eurostat (R&D and SBS)

*Based on the International Patent Classification (IPC) system, sectoral fields 37-41.

Throughout manufacturing, R&D activity tends to be concentrated in large corporations. The manufacturing of precision instruments is quite unique in this respect, since it is a fairly diverse industry more dominated by small and medium-sized enterprises.

Many successful R&D efforts may culminate in patent applications. In 2003, 4 339 applications were made in precision instruments, which accounted for 7 % of the manufacturing total. With 4.3 patent applications per

Table 5: Breakdown of total patent applications made to the European Patent Office (EPO) in 'precision instruments' *, by country, 2003

	Number of patents	Share in total	Number of patents per 1000 persons employed
EU-25	4339	100.0%	4.3
BE	96	2.2%	11.2
BG	2	-	0.3
CZ	9	0.2%	0.3
DK	109	2.5%	7.1
DE	1759	40.5%	5.5
EE	2	0.0%	0.8
IE	40	0.9%	2.0
ES	79	1.8%	2.3
FR	602	13.9%	4.4
IT	314	7.2%	2.5
CY	1	0.0%	2.0
LV	1	0.0%	0.5
LT	1	0.0%	0.3
LU	4	0.1%	2.0
HU	13	0.3%	0.6
MT	0	0.0%	0.4
NL	285	6.6%	11.7
AT	99	2.3%	6.2
PL	9	0.2%	0.2
PT	5	0.1%	0.8
RO	2	-	0.1
SI	7	0.2%	0.9
SK	4	0.1%	0.5
FI	95	2.2%	8.0
SE	209	4.8%	7.9
UK	590	13.6%	4.8
NO	33	-	4.2

Source: Eurostat (R&D and SBS)

*Based on the International Patent Classification (IPC) system, sectoral fields 37-41.

1000 persons employed in 'precision instruments' against barely 1.9 on average in manufacturing, this industry proves most knowledge intensive. Almost half of those patent applications (1 987) concern 'medical or surgical equipment and orthopaedic appliances' (Table 4). However, in relative terms, 'watches and clocks' seemed the most productive, with 12.1 patents per 1000 persons employed, against a sectoral average of 4.3.

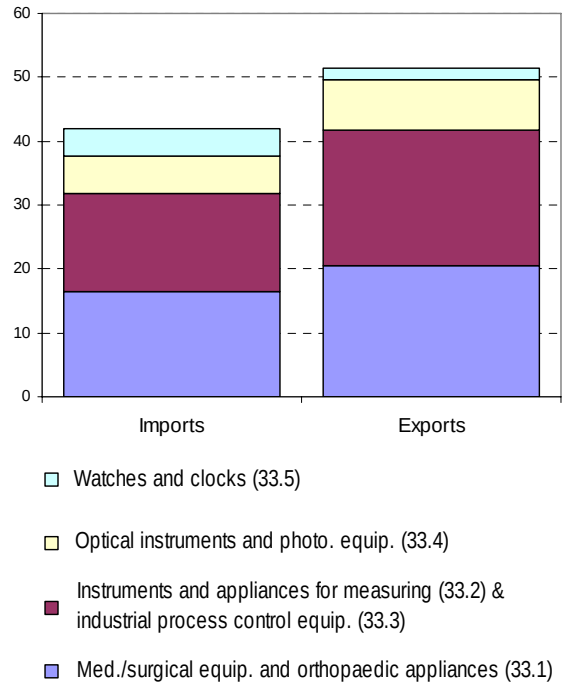
Germany was clearly the most industrious patent applicant, accounting for over 40 % of EU-25 patent applications (Table 5). This was about three times as many as France and the UK (each close to 14 %), and six times Italy's share (7 %). But again, when compared with the number of applications per person employed, the picture is different with the Netherlands and Belgium turning out to be the most productive, recording 11.7 and 11.2 applications respectively per person employed.

Overall trade surplus but deficit in 'watches and clocks'

In 2005, EU-25 exports of medical, precision and optical instruments, watches and clocks generated EUR 51.4 billion in revenues. With the value of imports at EUR 41.9 bn, the trade surplus was almost EUR 10 billion (Figure 7).

'Medical and surgical equipment and orthopaedic appliances' together with 'measuring instruments and appliances' (here including 'industrial process equipment'[1]) generated most of the EU's surplus. Only for 'watches and clocks' was a trade deficit (EUR 2.5 billion) observed in 2005. Yet even for this sub-sector – the smallest at EU level – the trade gap narrowed between 1999 and 2005 thanks to a faster increase in exports (+30 %) than in imports (+3 %).

Figure 7: Trade in 'precision instruments' (CPA 33), by product group, EU-25, 2005, in EUR billion



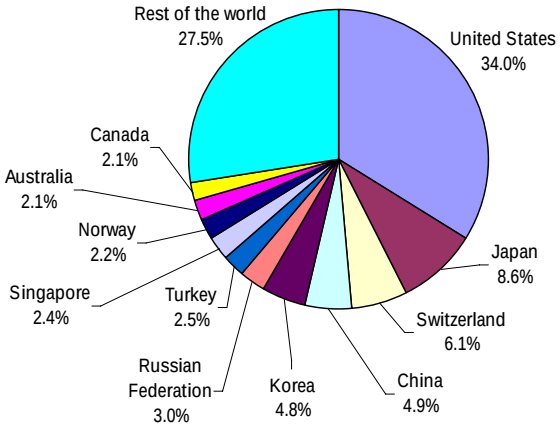
Source: Eurostat (Comext)

Between 1999 and 2005, trade grew significantly, with imports rising by 34 % and exports surging by 80 %. The growth in exports brought about a 21 % rise in production over the same period (see page 4).

The fastest trade increase was in 'medical and surgical equipment and orthopaedic appliances', with exports and imports growing by 113 % and 75 % respectively.

As shown in Figure 8, the main EU-25 export market of precision instruments was the United States, which accounted for 34 % of total exports, with Japan ranking second with merely 9 % of EU exports. The United States was more important as the first export destination for precision instruments than for manufacturing products as a whole, where its share in EU-25 exports was 12 percentage points lower.

Figure 8: Main destinations of EU-25 exports of 'precision instruments' products (CPA 33), EU-25, 2005



Source: Eurostat (Comext)

The four most important export destinations were also the four largest suppliers to the EU-25. The US supplied 39.4 % of the EU-25 precision instrument imports, against only 15.3 % of imports of manufactured products generally. Together with Switzerland (17 %), Japan (11 %) and China (10 %), the four major suppliers accounted for over three quarters of EU-25 precision instrument imports.

[1] International trade uses a CN-8 digit product classification. After converting back to the CPA codification related to NACE (used throughout this publication), making the distinction between NACE 33.2 and NACE 33.3 is no longer possible.

➢ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

DATA SOURCES

The source of all figures presented is Eurostat (unless specifically stated otherwise). Most data sources are continually updated and revised where necessary. This publication reflects the state of data availability in Eurostat's reference database as at December 2006.

Structural Business Statistics (SBS) is the main data source for this publication. Two main SBS data sets have been used: annual enterprise statistics and annual enterprise statistics broken down by size class. These and other SBS data sets are available under theme 'Industry, trade and services' on the Eurostat website http://epp.eurostat.ec.europa.eu/ (select 'Data' / 'Industry, trade and services' / 'Horizontal view' / 'Structural Business Statistics'). Selected publications, data and background information are available in the section dedicated to European Business, located directly under the theme 'Industry, trade and services' on the Eurostat website.

COMEXT Eurostat's database on external trade supplied data on the value of exports and imports of products, by type of product (CN8), by reporting Member State and by destination. When comparing external trade data, the production index (below) and structural business statistics (SBS), readers should note that these data originate from independent statistical sources, which are not entirely comparable. External trade data are based on product flows, the production index on kind-of-activity units, and business statistics on enterprises whose main activity is to produce these products. These enterprises could be involved in other types of production, while some 'precision instruments' could be produced also by enterprises with another main activity.

Short-Term Statistics (STS) were used to complement SBS data with information on the 'Industrial production index', which shows the evolution of value added at factor cost at constant prices.

R&D statistics (BERD) were also used. BERD stands for 'Business expenditure on R&D'. It covers total intra-mural R&D expenditure performed within the enterprise, regardless of its source of funds. This excludes any amount paid to some contractor, external to the enterprise, providing R&D facilities. R&D personnel is also covered, it includes all persons employed directly on R&D (in the conception or creation of new knowledge, development of products, processes, methods and systems), plus persons supplying direct services to R&D, such as managers, administrative staff and office staff. Their number can either be based on a full-time equivalent or on a simple headcount, as is the case in this publication.

COUNTRIES

This publication covers the 27 Member States (EU-27): Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK). Also included are the EFTA countries with data available: Norway (NO).

EU AGGREGATES

At the time of data processing for this publication, EU aggregates had been compiled for the EU-25 only and therefore exclude Bulgaria and Romania. EU-25 aggregates include estimates for missing components where necessary; EU-25 aggregates from the SBS data set were supplemented by rounded estimates based on non-confidential data where necessary and appropriate. Some differences may exist between aggregates and sub-components due to the rounding.

EXCHANGE RATES

All data are presented in ECU/EUR terms, with national currencies converted using average exchange rates prevailing for the year in question.

SYMBOLS

":" not available or confidential.

SECTORS

Statistics are presented by sectors of activity according to the NACE Rev. 1.1 system of classification. The 'Manufacture of medical, precision and optical instruments, watches and clocks' (NACE 33) is also classified as a 'High technology' manufacturing sector, based on the Eurostat/OECD's classification — itself based on the ratio of R&D expenditure to GDP or R&D intensity. Comparisons are made with the manufacturing industry (NACE Section D).

OBSERVATION UNIT

The observation unit is the enterprise. An enterprise carries out one or more activities at one or more locations. Enterprises are classified into sectors (by NACE) according to their main activity. The enterprise should not be confused with the local unit, which is an enterprise or part thereof situated on one location.

STRUCTURAL BUSINESS STATISTICS VARIABLES

Variables are defined according to Commission Regulation No 2700/98 and include:

Number of enterprises

The number of enterprises active during at least part of the reference period.

Number of persons employed

The total number of persons who work in the observation unit, as well as persons who work outside the unit but who belong to and are paid by it. It includes employees, part-time workers, working proprietors, unpaid family workers, seasonal workers etc.

Value added at factor cost

The gross income from operating activities after adjusting for operating subsidies and indirect taxes (including value added tax).

Turnover

The totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties.

Apparent labour productivity

This is a simple indicator of productivity calculated as value added divided by persons employed.

Average personnel costs

Personnel costs are the total remuneration, in cash or in kind, payable by an employer to an employee for work carried out. This is divided by the number of employees (paid workers), which includes part-time workers, seasonal workers etc, but excludes persons on long-term leave.

Wage adjusted labour productivity (%)

is obtained by dividing apparent labour productivity by average personnel costs.

Gross operating surplus

The gross operating surplus is the surplus generated by operating activities after the labour factor input has been recompensed. It can be calculated from the value-added at factor cost less the personnel costs.

The gross operating rate (%)

This is an indicator of profitability where the gross operating surplus (above) is related to the turnover generated.

Gross investment in tangible goods

All new and existing tangible capital goods, whether bought from third parties or produced for own use, having a useful life of more than one year including non-produced tangible goods such as land.

Further information:

Data: EUROSTAT Website/Home page/Industry, trade and services/Data

Industry, trade and services

- Industry, trade and services - horizontal view
  - Structural Business Statistics

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